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Chapter: A Comprehensive Analysis of Leadership Skills and Navigating Employment Trends

EMPLOYEE EMPOWERMENT AND TECHNOLOGY-DRIVEN CUSTOMER RELATIONSHIP MANAGEMENT: ENHANCING BRAND MANAGEMENT IN THE FMCG SECTOR THROUGH SEM-SVM ANALYSIS

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Annotation. This study investigates the relationships between employee empowerment, technology-driven customer relationship management (CRM), intelligence generation, organizational responsiveness, and brand management within Pakistan's Fast-Moving Consumer Goods (FMCG) sector. It explores how these factors influence each other and contribute to organizational success in a highly competitive market environment. Method: A quantitative approach was used with a sample of 356 employees from various FMCG organizations in Pakistan. Data were collected through a structured survey, and the measurement scales were adapted from established research. SEM-SVM, a Structural Equation Modelling and Support Vector Machine, was used for analysis using ADANCO and JASP software. The model assessed both the measurement and structural relationships among the variables. Findings: The findings reveal significant positive relationships between employee empowerment, technology-driven CRM, and organizational responsiveness, all contributing to enhanced brand management. Intelligence generation plays a pivotal role in boosting responsiveness and brand performance. Additionally, SVM analysis supports these results, showing substantial predictive accuracy (R^2 = 0.739, MAPE = 9.27%) for employee empowerment and responsiveness as key drivers of brand success. These insights highlight the critical importance of empowered employees and advanced CRM systems for FMCG sector success. Originality/Implications: This research offers novel insights into integrating employee empowerment and technology in CRM strategies within FMCG organizations in Pakistan. The implications emphasize the importance of fostering an empowered workforce and leveraging technology to enhance customer relationships and brand management strategies.

Keywords: employee empowerment, market orientation, AI auto-efficacy, leader-member exchange, brand management, technology-based customer relationship management.

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Introduction

Modern business organizational dynamics demand customer-centric approaches that exhibit organizational competitiveness (Bazienė, Gargasas, 2023; Žárská, Smetanová, 2024.) An empowered employee is now a significant organizational practice, where autonomy, decision-making authority, and responsibility among employees are believed to improve their performance and outcomes (Elshaer et al., 2024; Majewska, Bełtowska, 2023). On the other side, brand and technology-based customer relationship management (CRM) have become crucial for strategic business ventures to sustain market competition and ensure long-term customer loyalty (Samadhiya et al., 2023). The interplay between employee empowerment and these strategic dimensions has been so ferociously debated, given its potential to redefine the relationship of organizations between human resources and customer-centric goals (Elshaer et al., 2024). Because of fast-developing technology, organizations developed advanced CRM tools through the functionalities of empowered employees. It helps them fully exploit those systems' benefits (Miller et al., 2021). Brand management moved from marketing efforts to include internal branding strategies whereby the employees become brand ambassadors (Semwayo, 2024). This is so because employee empowerment remains essential in securing coherence between a brand's identity and customer's perceptions (Massoud et al., 2025). It is, therefore, important to explore the nexus between empowerment, market orientation, brand management, and technologies of CRM if one wants to understand how to optimize organizational resources for competitive advantage.

Extensive empirical research has been conducted on employee empowerment and its effects on organizational outcomes (Deep, Zanke, 2024). According to Divya et al. (2024), empowerment boosts employees' intrinsic motivation, leading to proactive behaviors with market-oriented strategies. Market orientation is the organization-wide focus on delivering superior value to customers and thrives when empowered employees' customer-centric thinking is expressed (Sekarini, Selvabaskar, 2024). Further empirical findings from Kumar et al. (2024) further indicate that dispersed employee empowerment is positively related to disseminating market intelligence to responsiveness and innovation. Empowered employees can enhance internal branding efforts within an organization by living the brand and becoming reliable in customer experiences; these have been proven by Carayannis et al. (2024). Internal branding incorporating empowered employees ensures cohesion between the organization's internal practices and the brand's external promises (Berry Singh, 2024). Recent studies conducted by Türkeş (2024) revealed that employee empowerment positively correlates with brand equity, given that empowered employees in decision-making also contribute to customer trust and loyalty. More support from the literature emphasizes how employee innovations contribute to brand differentiation (Arhin, Cobblah, 2024). In CRM, technology, without a doubt, has played a crucial role in the change organizations have undergone in managing customer relationships (Behera et al., 2024). For instance, according to Samadhiya et al. (2023), empowered employees with CRM tools can provide more customized customer experiences. This is because findings by Bazrkar et al. (2023) indicate that the effectiveness of technology-based CRM is only as good as the employee's ability to use their technological resources for strategic purposes. In conclusion, these findings suggest empowerment's complex yet valuable role in shaping organizational outcomes critical for performance and productivity.

Extensive research has been carried out regarding employee empowerment and its implications; still, various well-noted gaps exist regarding this area (Chaudhuri et al., 2023). More importantly, it has been

discussed in different studies how significant empowerment is in an individual's performance and organizational outcomes. However, more is needed regarding the specific impact of empowerment on market orientation (Monod et al., 2023). More specifically, though Elshaer et al. (2024) pointed out that market orientation is a function of organizational strategy, empowered employees' role in exploiting market-oriented practices still needs to be exploredstill needs to be explored. In fast-moving industries and consumer environments, there is a need for an agile, empowered response to customer preferences (Elshaer et al., 2024). The notion that employee empowerment is linked to brand management is understandable, but what is missing here is an understanding of how this empowerment will influence brand equity in nuanced ways (Altahrawi et al., 2023). Existing literature, such as that of Kumar et al. (2024), forms the base for studying internal branding; however, empirical evidence on how empowerment and decision-making impact brand-related thinking in terms of individual and team levels is still being determined. Moreover, where organizations are increasingly adopting branding approaches in a more technologically led way, the relationship between empowerment and technology still needs to be explored (Manis, Madhavaram, 2023). Another significant gap remains in technology-based CRM. While Berry and Singh (2024) identify empowerment to be an important facilitator in the success of CRM, the moderating influences of technological self-efficacy and leadership dynamics, including leader-member exchange, are lacking in extant literature. Furthermore, the mediating effect of market orientation, which may elucidate causal pathways linking empowerment and CRM outcomes, is rare in the current literature (Chatterjee et al., 2023). These gaps need to be addressed for the theoretical and practical understanding of the strategic role that employee empowerment plays in organizations.

The theoretical basis of this research lies in empowerment theory, resource-based view (RBV), and relational exchange theory. Based on empowerment theory, an employee's autonomy, resources, and authority for decision-making enables the person to develop intrinsic motivation and organizational commitment (Behera et al., 2024). This theory perfectly aligns with the assumption that empowered employees will contribute more to market oriented strategies, brand management, and CRM initiatives. Furthermore, RBV suggests that empowered employees are an organizational resource that may enable achieving and sustaining a competitive advantage through innovative and customer-oriented practices (Ledro et al., 2023). Relational exchange theory elaborates on the moderation and mediation effects described in this study.

On the one hand, based on this theory, trust, and collaborative leader-member exchange relationships become an imperative factor that would leverage empowerment practices by developing the potential for brand management (Faqihi, Miah, 2023). Similarly, AI auto-efficacy, as a technology capability, can enhance the relationship between empowerment and CRM by increasing technological adoption confidence (Mazingue, 2023). The study has two-fold objectives: to investigate the direct effects of employee empowerment on market orientation, brand management, and technology-based CRM and to examine further the mediating role of market orientation and the potential moderating influence of AI auto-efficacy and LMX in these relationships. In doing so, the present study addresses the empirical gaps identified in this research to contribute toward theoretical understanding while offering actionable insights for organizations looking to optimize empowerment strategies for competitive advantage.

1. Literature Review

1.1 Employee Empowerment

Employee empowerment is an important organizational behavior that is increasingly considered a crucial feature in improving organizational effectiveness (Deb *et al.*, 2023); this is particularly important in the

context of technologically-based customer relationship management (Yang, Babapour, 2023). Empowered employees use CRM tools considerably better, relying on technology to enhance customer relationships (Malik *et al.*, 2022). Research findings indicate that granting freedom, access to training, and involvement in decision-making empower employees to take more proactive action concerning solving CRM-related problems (Mer, Virdi, 2022). These practices increase the confidence and motivation of employees towards serving their customers with more personalized and responsive customer service experiences (Pai *et al.*, 2022). More empowered employees tend to utilize the analytics of CRM for better prediction of customer needs and preferences, which can open opportunities for more in-depth interaction with the customers and, eventually, loyalty (Foltean, van Bruggen, 2022). This needed employee autonomy with technology enables 'customer-centeredness' within the organization; hence, fostering a culture that involves empowerment maximizes the potential of CRM systems (Chowdhury *et al.*, 2022). At the same time, it also significantly impacts brand management by building a staff that aligns with the brand identity and the organization's value system. Empowered employees serve as brand ambassadors, embodying the DNA in all interactions and decision-making aspects (Sohrabi *et al.*, 2022). The research established that organizations that continue to invest in empowering their workforce witness enhanced brand consistency and positive changes in customer perceptions (Padigar *et al.*, 2022). This becomes particularly critical in technology-driven environments, where digital touchpoints are pivotal brand interaction platforms (Elshaer *et al.*, 2024). Empowering employees with the right tools and accountabilities enables them to deliver brand integrity into all channels, which means a seamless customer experience (Elshaer *et al.*, 2024). Further, their prompt and innovative resolution of problems reinforces the idea that this is a reliable brand and customer-centric. This synergy of empowerment and brand management helps maintain the competitive advantage in dynamic landscapes of markets (Massoud *et al.*, 2025).

1.2 Employee Empowerment and Market Orientation

The term market orientation was understood to be the systematic focus of the organization to create superior value for customers through the generation, dissemination, and responsiveness to market intelligence (Divya *et al.*, 2024). Past empirical studies have widely emphasized the essentiality of employee empowerment in fostering market orientation. According to Kumar *et al.* (2024), employee empowerment allows employees to participate actively in market intelligence processes that influence the organization's ability to identify and respond to customer needs better. Berry and Singh (2024) revealed that empowered employees have higher motivation to align their tasks with organizational market strategies in pursuit of superior customer engagement and value delivery. This was further supported by research by Arhin and Cobblah (2024), who pointed out that the workforce at decision-making authority contributes towards formulating customer-centric strategies because of being closer to the realities of the market. This further makes frontline employees in empowered work environments more action-oriented within customers' feedback, resulting in a more responsive and agile market orientation (Samadhiya *et al.*, 2023). Empowerment has recently been highlighted for its role in innovative approaches to market challenges (Anwar *et al.*, 2025).

Chaudhuri *et al.* (2023) argue that these employees are even more responsive to changing market requirements and enhance the firm's competitive position, which becomes a significant burden for management in highly competitive industries. Employee sensitivity may provide this important difference (Altahrawi *et al.*, 2023). Thus, these results claim that empowering employees is a management practice and an enabler of strategic behaviors in market-oriented organizations. The employee empowerment-market orientation relationship is well-grounded in empirical evidence, as it evidences empowerment as

a crucial determinant for market-driven strategies (Chatterjee *et al.*, 2023). Empowerment boosts the feeling of ownership among employees and pushes them to search proactively for ways of improving markets (Faqihi, Miah, 2023). A limited number of studies suggest that autonomy in decision-making allows employees to apply their creativity in tackling market demands better to grasp the feelings and expectations of the customers (Deb *et al.*, 2023). This leads to the research of Malik *et al.* (2022), where it was established that empowered employees are likely to contribute to the strategic aim of the firm by actively contributing through involvement in market intelligence dissemination and strategy implementation.

Furthermore, empowerment enhances employees' ability to collaborate across departments, which is most likely to integrate diverse approaches in developing market-oriented strategies (Pai *et al.*, 2022). This finds support in the work of Chowdhury *et al.* (2022), which showed that empowered employees enhance cross-functional coordination, an integral part of market orientation. Secondly, technological support has enhanced the role of empowerment in market orientation, as the employee who is appropriately provided with digital tools can better analyze and respond to market trends (Padigar *et al.*, 2022).

H1. Employee empowerment significantly influences market orientation.

1.3 Employee Empowerment and Brand Management

Brand management encompasses the strategies and actions undertaken to build, maintain, and enhance a brand's equity and reputation (Sohrabi *et al.*, 2022). Empirical studies have shown that employee empowerment is pivotal in ensuring brand consistency and strengthening brand equity. Foltean and van Bruggen (2022) state that empowered employees are likelier to act as brand ambassadors, consistently representing the brand's values in customer interactions. Similarly, in line with the research conducted by Mer and Virdi (2022), empowered employees contribute to brand building as they exhibit greater engagement and authenticity, well resonating positively with the customers. Further evidence is afforded by Yang and Babapour (2023), who found that employee empowerment fosters the internalization of values toward the brand, thus enabling the employee to experience the brand faithfully.

Employees empowered will also be flexible enough in managing brand-related issues so that the brand would remain believable and trustworthy in fast-moving markets, proposes Mazingue (2023). Hence, organizations would obtain strategic relevance in brand management where internal branding activities closely reflect customer perceptions (Ledro *et al.*, 2023). Relating this to the empirical finding, the relationship between employee empowerment and brand management can be understood through the prism of employee-brand alignment (Manis, Madhavaram, 2023). It means that when employees are empowered, they are more likely to understand and internalize the brand's strategic vision, which translates into constant brand representation across customer touchpoints (Monod *et al.*, 2023). Bazrkar *et al.* (2023) further provide supporting evidence relating to how employees empowered to make decisions are found to adhere better to brand standards even when the circumstances are against them. Employee empowerment also allows one to personalize interactions with the customer while remaining consistent with a brand, as given by Behera *et al.* (2024). This flexibility ensures the brand is always likable and current, specifically in customer-centric industries. There is also a culture of innovation through empowerment, which would help employees contribute ideas for improving brand strategies (Türkeş, 2024). This is related to Carayannis *et al.* (2024) and (Hussain, Ahmed, 2020) findings that

employee-driven innovation strengthens brand equity. Thus, based on empirical findings, the hypothesis on employee empowerment significantly affecting brand management is supported.

H2. Employee empowerment significantly influences brand management.

1.4 Technology-based Customer Relationship Management

Technology-based customer relationship management involves managing every contact with customers using technology instruments to enhance customer satisfaction and increase retention (Sekarini, Selvabaskar, 2024). Studies provide evidence of the empowerment of employees in optimizing a CRM system. Deep and Zanke (2024) consider that customers are better handled and served when employees are empowered to adopt and practice CRM technologies since they can detect the system's functionalities to improve custodianship (Semwayo, 2024). Research by Samadhiya *et al.* (2023) further highlighted that empowered employees contribute to better data accuracy and utilization within CRM systems, leading to more personalized customer experiences. Moreover, (Elshaer *et al.*, 2024) found that empowerment enhances employees' ability to interpret CRM analytics, enabling them to anticipate customer needs and respond proactively. This is particularly important in service-oriented industries, where timely and tailored responses are critical (Semwayo, 2024).

Studies by Divya *et al.* (2024), in particular, underscore the effectiveness of empowered employees in integrating CRM systems into a company's operations, thus ensuring that customer relationship strategies achieve actual implementation. The findings collectively imply that the realization of technology-based CRM depends on employee empowerment (Carayannis *et al.*, 2024). There is empirical evidence for the relationship between employee empowerment and technology-based CRM, which indicates empowerment's role in adopting and using technology (Arhin, Cobblah, 2024). More empowered employees would proactively use CRM tools for data insights and customer relationships. The empirical evidence relates to research by Bazrkar *et al.* (2023), where employees with a say in decision-making have a better chance of having personalized CRM strategies adapted to customer data. However, empowerment also promotes a sense of responsibility within employees to own CRM outcomes (Altahrawi *et al.*, 2023). This point is further supported by (Ledro *et al.*, 2023), who showed how an empowered employee remained better at converting knowledge from CRM into strategy. Empowerment also encourages continuous learning, enabling employees to stay updated on their current RMMS advances and incorporate them into their working sessions (Deb *et al.*, 2023).

H3. Employee empowerment significantly influences technology-based customer relationship management.

1.5 Mediation of Market Orientation

Market orientation can be cited as a critical organizational capability that underscores customer-centric strategies and market responsiveness (Mer, Virdi, 2022). Empirical research has shown that market orientation acts as a bridge between employee empowerment and brand management, where it transforms inner empowerment into outer brand performance. Chowdhury *et al.* (2022) asserted that empowered employees are crucial to market-oriented organizations that aggregate and interpret customer insight, an essential element in brand positioning. Samadhiya *et al.* (2023) further showed that empowered employees make an organization market-oriented by cultivating effective communication, thereby conforming the brand strategies with the market's requirements. According to Massoud *et al.* (2025), market orientation further strengthens brand management by putting customer expectations in

proper alignment with brand promises with the help of empowered employees functioning as channels of market intelligence to maximize customer-centric brand development.

Sekarini and Selvabaskar (2024) also showed that more market-oriented organizations have higher brand equity because better, real-time market insights drive their brand strategy. Together, these findings suggest the mediating role of market orientation in leveraging employee empowerment for superior brand outcomes (Berry, Singh, 2024). Market orientation acts as a mediator through which empowered employees contribute to brand strategies and mediates the relationship between employee empowerment and brand management (Behera *et al.*, 2024). The empowered employees can gather and disseminate market intelligence in building and fine-tuning brand positioning. As Chaudhuri *et al.* (2023) argue, market orientation enables an organization to combine transactional employee-driven insights into actionable brand strategies. In addition, the responsive nature of empowered employees helps the company better align the brand with the shifts in customer preferences (Manis, Madhavaram, 2023). As Faqihi and Miah (2023) noted, market-oriented practices augment employee contributions to brand equity. Moreover, market orientation promotes cross-functional collaboration to align brand strategies with various market insights.

H4. Market orientation significantly mediates the relationship between employee empowerment and brand management.

Market orientation has been widely studied as a key enabler of technology-based CRM. Research done by Yang and Babapour (2023) emphasized that organizations motivated by the market are likelier to adopt CRM applications because customer needs and knowledge of the marketplace drive them. In the same way, studies published by Pai *et al.* (2022) confirmed that market orientation enhances CRM effectiveness when customers' information is gathered and used strategically. The empowered employee is integral to this model as he or she seeks and acts on market intelligence (Sohrabi *et al.*, 2022). Elshaer *et al.* (2024) reasoned that a market-oriented organization enhances the functionality of its CRM systems through technological capabilities into a market-driven objective. This is further elated by Deep and Zanke (2024), who contend that market-oriented organizations utilize the muscles of CRM not only to enhance client engagement but also based on information compiled by empowered employees.

Such findings entail that employee empowerment is channeled through market orientation as a mediator in bringing effective CRM practices (Kumar *et al.*, 2024). The mediating role between employee empowerment and technology-based CRM, the market orientation, is founded in its ability to operationalize empowerment to strategic CRM practices (Türkeş, 2024). The empowered workforce thereby adds toward market orientation gathering, hence sharing customer insights critical for using CRM systems. This aligns with research from Samadhiya *et al.* (2023), which proves that high market orientation enables the relevance and accuracy of the existing CRM information, ensuring that such a system supports customer-centered strategies. Furthermore, high market orientation creates an environment of collaboration that allows empowered employees to align their CRM efforts with organizational goals (Monod *et al.*, 2023). The study by Chatterjee *et al.* (2023) supports this perspective since they revealed that market-oriented practices have a multiplying effect on the relationship between employee empowerment and CRM effectiveness. This mediation role about employee empowerment and CRM assures technology tools are used for optimum potential.

H5. Market orientation significantly mediates the relationship between employee empowerment and technology-based customer relationship management.

1.6 Moderation of AI Auto-efficacy

Employees' belief in their competency to use AI effectively is defined as AI auto-efficacy, a crucial determinant of organizational outcomes (Mazingue, 2023). According to research by Malik *et al.* (2022), employees show high AI auto-efficacy while integrating AI technologies into their workflows, thereby increasing and improving performance and contribution toward managing the brand. Similarly, studies by (Foltean, van Bruggen, 2022) indicated that AI tools improve brand management by providing data-based insights through which employees may ensure coherence and innovation in brand strategies. More empirical evidence drawn from Padigar *et al.* (2022) demonstrates that AI auto-efficacy improves employee empowerment to influence brand outcomes more strongly and sustainably.

Employees confident in using AI tools can better align their actions with brand objectives because they use AI-based insights to make strategic brand decisions (Elshaer *et al.*, 2024). The core takeaway is the mechanism of AI auto-efficacy as a mediator that strengthens a link between empowerment and brand management (Samadhiya *et al.*, 2023). AI auto-efficacy moderates the effect of employee empowerment on brand management since empowered employees with high self-efficacy can leverage AI tools for brand-related work much more effectively (Elshaer *et al.*, 2024). Therefore, employees with high employee empowerment and AI auto-efficacy will likely use AI-driven analytics to exploit potential brand improvement opportunities (Semwayo, 2024). This aligns with Massoud *et al.* (2025) study, which showed that adopting AI tools increased brand management by enabling employees to make data-informed decisions.

Moreover, AI auto-efficacy motivates employees to experiment with new AI competencies to discover new brand strategies (Berry, Singh, 2024). Carayannis *et al.* (2024) also established that innovations prompted by AI build brand equity and a customer attitude. The moderation of AI auto-efficacy between empowerment and brand management ensures that empowered employees exploit all the available technological instruments to improve brand results.

H6. AI auto-efficacy significantly moderates the relationship between employee empowerment and brand management.

AI auto-efficacy significantly moderates the relationship between employee empowerment and technology-based customer relationship management (Kumar *et al.*, 2024). Thus, AI auto-efficacy is the key to improving technology-based CRM through empowering workers who can work efficiently in AI-driven CRM tools (Sekarini, Selvabaskar, 2024). Divya *et al.* (2024) have discovered that high AI auto-efficacy employees effectively use interactive advanced CRM systems for their interaction with customers and thus personalize and predict better results. Similarly, researchers by Deep and Zanke (2024) assert that AI-based CRM applications give employees actionable insights, which, with the right assistance of high AI auto-efficacy, lead to better engagement and satisfaction of customers. Furthermore, according to Massoud *et al.* (2025), confident AI users are likelier to employ AI functionalities in their CRM systems, such as chatbots and predictive customer analysis.

This has led to increased efficiency and responsiveness of customer relationship management efforts (Sohrabi *et al.*, 2022). Foltean and van Bruggen (2022) established that AI auto-efficacy increases synergy between employee empowerment and CRM performance, whereby empowered employees with AI confidence can utilize technology to efficiently attain the organization's CRM objectives. The studies show that these collectively point to the critical moderating role of AI auto-efficacy in technology-based CRM contexts (Mer, Virdi, 2022). A relationship between employee empowerment and technologically-

supported CRM occurs, moderated by technology that makes employees confident and skilled to employ AI-driven tools effectively (Yang, Babapour, 2023). Employees empowered with high AI auto-efficacy can use CRM systems for analyzing data about customers and predicting behavior while taking a fitting service strategy that extends the process of CRM (Mazingue, 2023). This resonates with research conducted by Ledro *et al*. (2023), depicting that technologically confident workers facilitate the successful exploitation of CRM strategies. In this regard, AI auto-efficacy is bound to create an innovative and dynamic culture that enables workers to learn new features of CRM and develop customer relationship practices (Manis, Madhavaram, 2023). Research by Monod *et al*. (2023) revealed that employees who can use AI for adaptive skills are likely to align functionalities of CRM with customer-centric goals, thus meaning better outcomes. The moderating effect is further supported by insights from Bazrkar *et al*. (2023), who ascertained that implementing AI in CRM offers better outcomes if employees have high efficacy in using an AI tool.

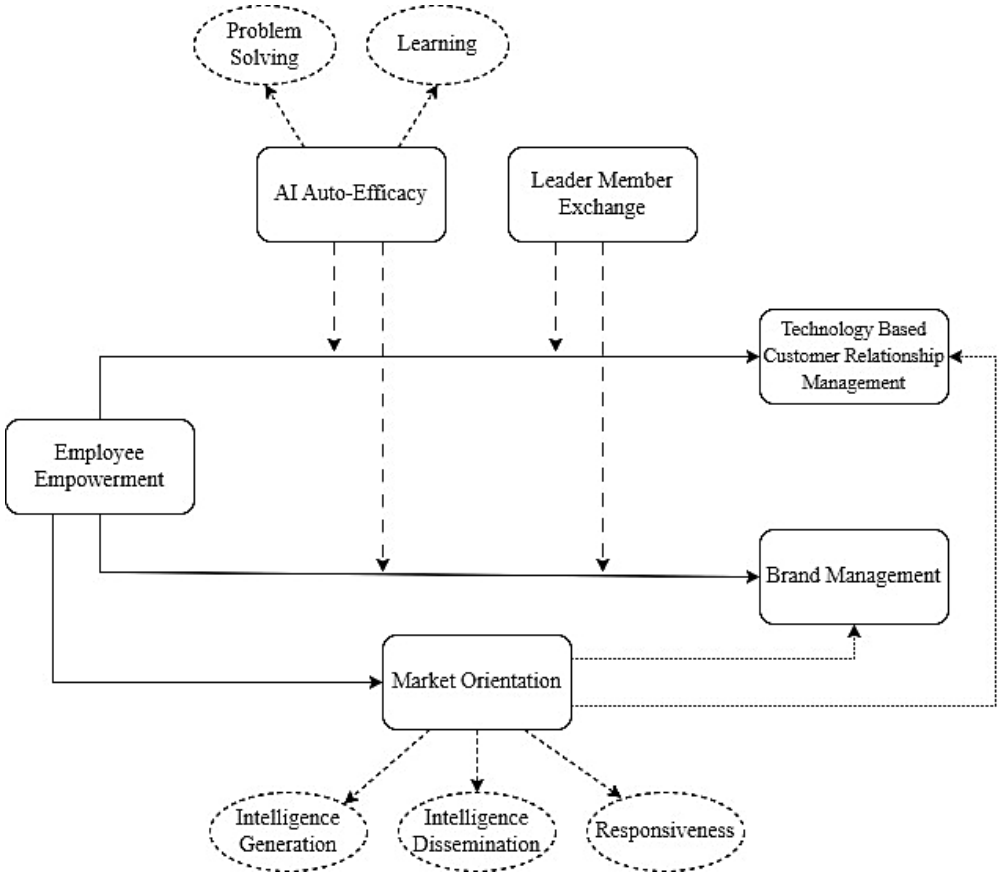
H7. AI auto-efficacy significantly moderates the relationship between employee empowerment and technology-based customer relationship management.

1.7 Moderation of Leader-member Exchange

Leader-member exchange theory focuses on the quality of relationships between leaders and subordinates, significantly impacting organizational outcomes (Behera *et al.*, 2024). Empirical research, such as that by Türkeș (2024), demonstrates that when there is quality in LMX, it promotes a supportive environment where employees are encouraged to participate in brand management programs. According to research by Carayannis *et al.* (2024), quality LMX relationships build high-quality employees' sense of ownership in brand-related activities leading to better congruence between the individual's contributions and organizational brand strategy. Additionally, the researches of Sekarini and Selvabaskar (2024) reveal that the employees who go through a good quality LMX relationship receive more guidance and resources on brand management activities, thus increasing their competencies for brand object support.

Sohrabi *et al*. (2022) also found that LMX plays a key role in how empowerment translates to brand management results, given that leaders in high LMX relationships actively mentor and motivate employees to maintain brand standards. These findings place LMX as an important moderating variable in the relationship between empowerment and brand management (Foltean, van Bruggen, 2022). Leader-member exchange moderates the relationship between employee empowerment and brand management by influencing the support and feedback employees receive from their leaders (Mer, Virdi, 2022). For example, quality, high LMX relationships empower employees; for instance, such employees feel more confident to execute brand-related initiatives when the leaders trust and resource them (Yang, Babapour, 2023). This perspective is supported by studies such as those by Samadhiya *et al*. (2023), which found that LMX strengthens employees' commitment to organizational goals, including brand management. Additionally, high LMX relationships provide employees with more explicit expectations and enhanced collaboration opportunities, enabling them to align their efforts with the organization's brand identity (Semwayo, 2024). In this regard, it is evident from studies by Deep, Zanke (2024) that LMX creates an empowering work environment for employees to innovate and meaningfully contribute to brand strategies.

H8. Leader-member exchange significantly moderates the relationship between employee empowerment and brand management.



Source: created by the authors.

Figure 1. **Proposed Conceptual Model of the Study**

Mazingue (2023) also showed that LMX increases employee self-efficacy to use CRM systems, enabling the integration of employee empowerment and technology-based CRM practices. These findings emphasize the moderating role of LMX in an employee empowerment-CRM effectiveness relationship (Ledro *et al.*, 2023). An obvious function of moderating variable leader-member exchange in the employee empowerment-technology-based CRM relationship is that it equips employees with resources and support in maximizing their application of CRM (Manis, Madhavaram, 2023). Highly empowered employees in their LMX relationships are likely to perform at their best regarding the responsibilities linked with CRM tasks due to the constant feedback and encouragement they receive from leaders (Monod *et al.*, 2023). This is in sync with research conducted by Bazrkar *et al.* (2023), which indicates LMX increases the engagement of employees with technology based on the development of trust and cooperation. Additionally, LMX fosters mutual respect and shared goals that enable the employees to align their CRM activities with organizational objectives (Behera *et al.*, 2024). According to Türkeş (2024), high-quality LMX promotes employees' flexibility and problem-solving skills for effective CRM implementation.

H1. Leader-member exchange significantly moderates the relationship between employee empowerment and technology-based customer relationship management.

The conceptual model of the study was constructed and proposed based on the previous literature, which is depicted in *Figure 1*.

2. Methodology

2.1 Research Design

The present research adopts a quantitative design investigating the relationship between employee empowerment, technology-driven customer relationship management (CRM), intelligence generation, organizational responsiveness, and brand management in Pakistan's Fast-Moving Consumer Goods (FMCG) sector. A structural equation modeling approach has been followed to test the hypothesized relationships between the constructs under the given research problem and hypotheses. The study used ADANCO software with high adaptability for partial least squares structural equation modeling (PLS-SEM) to analyze data. This method enables holistic analyses of the measurement and the structural model, providing insight into direct and indirect relationships between variables. This research will focus on employees working for organizations in the FMCG sector in Pakistan. The sample was drawn from employees at various levels and departments, such as sales, marketing, customer relations, and management. The total sample size of the study is 356 employees, so all these groups are sufficiently represented among participants who are directly involved in customer relationship management and brand management. This research is conducted with participants chosen through a non-probability convenience sampling technique that selects participants with relevant knowledge and experience pertinent to the study variables. Due to the size and heterogeneity of the sample, this research's findings will apply to a broad spectrum of FMCG organizations in Pakistan and thus increase generalizability to the sector.

2.2 Data Collection Method

The data for the study were collected by distributing a structured survey questionnaire among the selected employees. The questionnaire was designed to capture data on key variables such as employee empowerment, technology-driven CRM, intelligence generation, organizational responsiveness, and brand management. Multiple items were used to measure each construct adapted from established scales in previous research. Items were chosen with utmost care to relate to the context of FMCG in Pakistan and the organizational settings under which the respondents were employed. The questionnaire was available in electronic and hardcopy forms, and respondents could use either one, depending on their preference. The questions were accompanied by clear guidelines to ensure accurate responses. A total of 356 valid responses was obtained, thus providing a reasonably good sample size for carrying out PLS-SEM analysis with reliability. Data collection took four weeks to be completed with reminders to acquire a high response rate. The response rate was impressive, with 356 persons providing usable data for analysis, thus ensuring the sample size met the minimum requirements for conducting the SEM analysis.

2.3 Measurement Scales

Using scales adapted from prior research, we chose the measurements that would be shown to have validity and reliability (*Table 1*). For each construct, the items selected had established usage in previous studies by organizations in organizational behavior, customer relationship management, and brand management.

Table 1. Scales used for data collection

Sr. No	*Variable Name*	*Items*	*Scale Reference*
1.	Employee empowerment	Five	Wong and Perry, 2011)
2.	Market orientation	Eleven	Jyoti and Sharma, 2012)
3.	*a) Intelligence generation*	Four	
4.	*b) Intelligence dissemination*	Four	
5.	*c) Responsiveness*	Three	
6.	AI auto-efficacy	Six	Basri, 2024)
7.	*a) Problem-solving*	Three	
8.	*b) Learning*	Three	
9.	Leader member exchange	Five	Basri, 2024)
10.	Brand Management	Eleven	Lee *et al.*, 2008)
11.	Technology based customer relationship management	Six	Lin *et al.*, 2010)

Source: created by the authors.

2.4 Data Analysis Techniques

Once the data were collected, they were analyzed using ADANCO, a PLS-SEM software. The analysis process was conducted in two primary steps: first, evaluating the measurement model for reliability and validity, and second, examining the structural model to test the hypotheses. The measurement model was assessed for construct validity (both convergent and discriminant validity) and reliability (using composite reliability and Cronbach's alpha). Convergent validity was checked by ensuring that the average variance extracted for each construct was above the threshold value, meaning that the indicators for each latent variable explained a sufficient portion of the variance in the construct. Discriminant validity was checked using the Fornell-Larcker criterion, which compares the square root of the AVE for each construct with the correlations between constructs to ensure that the constructs are distinct from one another. After the validation of the measurement model, the structural model was estimated to test for the relationship between the constructs (Ahmed *et al.*, 2024). Path coefficients were examined to assess the direction and strength of the relationship, while R-squared values for the endogenous variables were calculated to provide an idea of the explanation power of the model. Bootstrapping was used to test the significance of the path coefficients, and a resampling procedure was conducted to produce standard errors and t-values. Two-tailed tests with 5% levels of significance were used. This made it possible to determine the hypothesized relationships that are statistically significant and thus supported by the data.

The analysis for this research implemented the Support Vector Machine (SVM) model to analyze the goodness-of-fit and interpret different independent variables' predictive powers using JASP software. Metrics for evaluations considered Mean Squared Error, Root Mean Squared Error, Mean Absolute Error, Mean Absolute Percentage Error, and R^2 as the appropriate tool to estimate the models and their fit. In addition, additive explanations were developed to decompose the predicted values for test cases, which explained the role of variables like Employee Empowerment, Intelligence Generation, and Market Orientation in making predictions. This overall approach ensured a comprehensive and robust analysis of factors determining employee outcomes in the FMCG industry.

3. Results

3.1 Reliability and Validity Metrics

Table 2 presents the reliability and validity metrics for the constructs used in the study. Dijkstra-Henseler's rho (ρA), Jöreskog's rho (ρc), and Cronbach's alpha (α) assess the internal consistency of the constructs.

Table 2. Variables reliability and validity

Construct	Dijkstra-Henseler's rho (ρA)	Jöreskog's rho (ρc)	Cronbach's alpha(α)	Average variance extracted (AVE)
Employee empowerment	0.830	0.819	0.811	0.579
Technology based customer relationship management	0.765	0.746	0.731	0.534
Brand Management	0.926	0.924	0.923	0.525
Intelligence generation	0.876	0.864	0.856	0.617
Intelligence dissemination	0.778	0.758	0.772	0.532
Responsiveness	0.789	0.788	0.787	0.524
Leader member exchange	0.881	0.877	0.878	0.590
Problem-solving	0.809	0.797	0.796	0.570
Learning	0.791	0.784	0.781	0.522

Source: created by the authors.

All constructs meet the acceptable thresholds (generally 0.7 or higher), indicating robust reliability. For instance, „Leader-Member Exchange“ exhibits high internal consistency with ρA = 0.881, ρc = 0.877, and α = 0.878, highlighting its stable measurement structure. Similarly, „Brand Management“ shows the highest reliability with ρA = 0.926, ρc = 0.924, and α = 0.923. The AVE values further establish convergent validity. All constructs have a minimum threshold of 0.5. For instance, „Intelligence Generation“ has an AVE of 0.617, and „Leader-Member Exchange“ has an AVE of 0.590, showing higher convergence among the items. However, constructs like „Responsiveness“ (AVE = 0.524) and „Learning“ (AVE = 0.522) are close to the threshold. Thus, they must be interpreted cautiously but still validate the study. In general, the statistics affirm that the constructs are reliable and valid for the analysis of the study.

3.2 Measurement Items Fitness Statistics

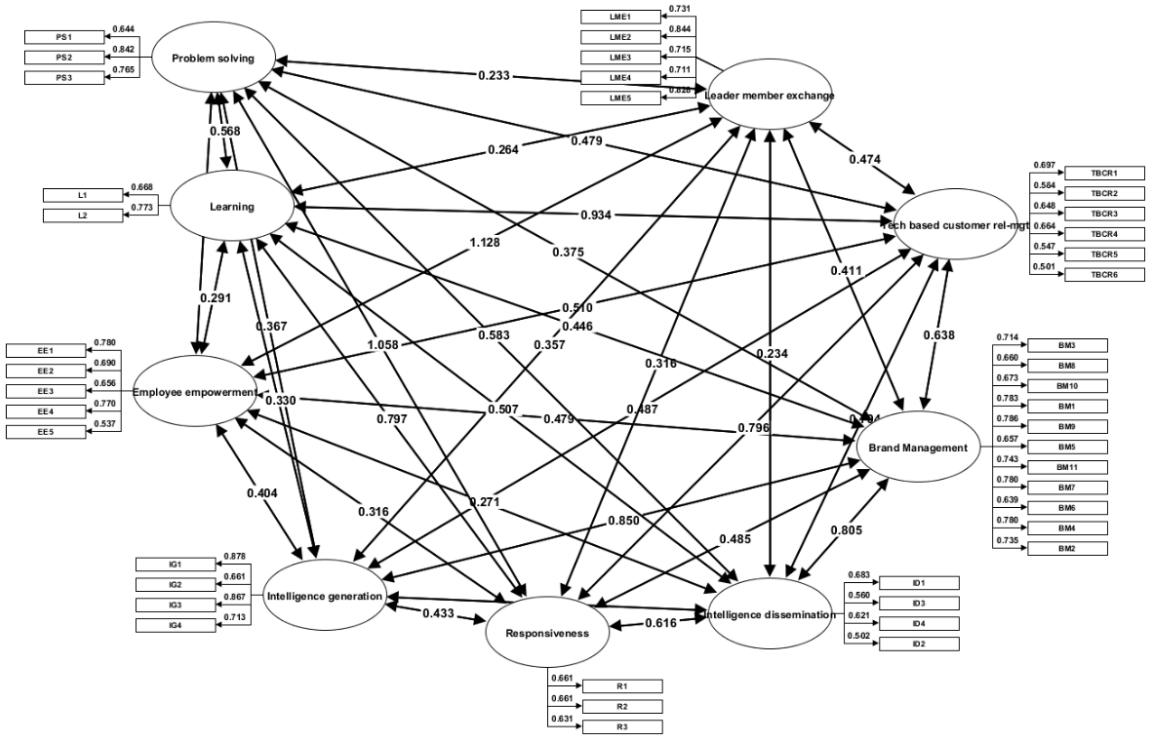
The standardized loadings represent the item-level reliability; see *Table 3* and *Figure 2*. A value above 0.5 is acceptable. The indicators for „Employee Empowerment“ (e.g., EE1 = 0.780, EE4 = 0.770) and „Intelligence Generation“ (e.g., IG1 = 0.878, IG3 = 0.867) demonstrate strong loadings, indicating their robust contribution to their respective constructs. However, some indicators, such as EE5 (0.537) and TBCR6 (0.501), have weaker loadings, which, while acceptable, suggest potential refinement in future studies. „Brand Management“ has several good indicators, BM7 (0.780) and BM9 (0.786), which testify to a good measurement model. Poorer indicators like ID2 (0.502) for „Intelligence Dissemination“ may not reach the threshold of adequacy, which may require closer scrutiny of their conceptual appropriateness. The table indicates that the constructs are well-measured, but some indicators may be refined to enhance the model's robustness further.

Table 3. Measurement Items Fitness Statistics

Indicator	1	2	3	4	5	6	7	8	9
EE1	0.780								
EE2	0.690								
EE3	0.656								
EE4	0.770								
EE5	0.537								
TBCR1		0.697							
TBCR2		0.564							
TBCR3		0.648							
TBCR4		0.664							
TBCR5		0.547							
TBCR6		0.501							
PS1								0.644	
PS2								0.842	
PS3								0.765	
L1									0.668
L2									0.773
IG1				0.878					
IG2				0.661					
IG3				0.867					
IG4				0.713					
ID1					0.683				
ID2					0.502				
ID3					0.560				
ID4					0.621				
R1						0.661			
R2						0.661			
R3						0.631			
BM1			0.783						
BM2			0.735						
BM3			0.714						
BM4			0.780						
BM5			0.657						
BM6			0.639						
BM7			0.780						
BM8			0.660						
BM9			0.786						
BM10			0.673						
BM11			0.743						
LME1							0.731		
LME2							0.844		
LME3							0.715		
LME4							0.711		
LME5							0.828		

Notes: 1. Employee empowerment, 2. Technology based customer relationship management, 3. Brand Management, 4. Intelligence generation, 5. Intelligence dissemination, 6. Responsiveness, 7. Leader-member exchange, 8. Problem solving, 9. Learning.

Source: created by the authors.



Source: created by the authors.

Figure 2. **Estimated Model**

3.3 Multicollinearity of the Items

Table 4 is concerned with testing the multicollinearity of the items of the measurement model using VIF values.

Table 4. Indicator Multicollinearity

Indicator	1	2	3	4	5	6	7	8	9
EE1	1.752								
EE2	2.253								
EE3	2.141								
EE4	2.089								
EE5	1.195								
TBCR1		2.284							
TBCR2		2.147							
TBCR3		1.457							
TBCR4		2.613							
TBCR5		2.199							
TBCR6		1.024							
PS1								1.603	
PS2								1.668	
PS3								1.935	
L1									1.363
L2									1.363
IG1				2.557					
IG2				1.458					
IG3				2.985					
IG4				2.279					

Table 4 *(continuation)*. Indicator Multicollinearity

Indicator	1	2	3	4	5	6	7	8	9
ID1					1.954				
ID2					1.389				
ID3					1.762				
ID4					1.039				
R1						1.568			
R2						1.397			
R3						1.247			
BM1			1.734						
BM2			2.425						
BM3			2.241						
BM4			3.162						
BM5			2.332						
BM6			1.500						
BM7			2.859						
BM8			3.126						
BM9			3.104						
BM10			2.855						
BM11			2.694						
LME1							2.569		
LME2							2.360		
LME3							2.386		
LME4							2.195		
LME5							2.074		

Notes: 1. Employee empowerment, 2. Technology based customer relationship management, 3. Brand Management, 4. Intelligence generation, 5. Intelligence dissemination, 6. Responsiveness, 7. Leader-member exchange, 8. Problem solving, 9. Learning.

Source: created by the authors.

Multicollinearity refers to a condition in which two or more highly correlated predictors. Such correlation distorts the regression analyses' results. VIF values in this analysis indicated that none of the items show values over the threshold of 3, commonly considered a problematic cutoff for multicollinearity. For instance, VIF values under the Employee Empowerment construct for items EE1 and EE4 fall within 1.2 to 2.5, indicating these items do not correlate significantly. Similarly, other constructs such as Technology-Based CRM (TBCR1 and TBCR4) have VIF within an acceptable range of 1.2–2.5, which, based on the given standards, ensure stable item contribution and insignificant multicollinearity in the model. This further enhances the construct and measurement model with a good independent measurement of its intent toward the constructs' representation. Moreover, constructs like Brand Management and Intelligence Generation have low VIF values, indicating no redundancy among the items. These are critical findings because they indicate that the model's indicators may be considered unique and not redundant, which is what is required to have credible and valid findings.

3.4 Fornell-Larcker Criterion

Table 5, using the Fornell-Larcker criterion to evaluate the discriminant validity of constructs in the measurement model. Discriminant validity ensures that each construct empirically is distinct and does not overlap with the others. The discriminant validity is established, based on the Fornell-Larcker criterion, when the square root of AVE for a construct is more significant than any correlation between that construct and all other constructs in the model. In this table, diagonal elements are the square root of AVE for each construct, and off-diagonal elements indicate the correlation between the constructs. As shown in the result, all the diagonal values that denote the AVE value are more significant than the off-

diagonal correlation, which signifies that the constructs are distinct. For example, the square root of AVE for Employee Empowerment is 0.761 and is much higher than when correlated with Technology-Based CRM at 0.412 and Brand Management at 0.358. The same applies to all constructs, for example, Intelligence Generation and Responsiveness, confirming that each construct uniquely contributes to the general model. These findings ensure that the constructs in question do not share significant variance in common, which is a primary requirement to confirm that the two indeed measure different perspectives of the conceptual framework in question.

Table 5. Discriminant Validity: Fornell-Larcker Criterion

Construct	1	2	3	4	5	6	7	8	9
1. Employee Empowerment	0.6572								
2. Tech-Based CRM	0.2834	0.6825							
3. Brand Management	0.2419	0.3351	0.7043						
4. Intelligence Generation	0.2037	0.2596	0.4187	0.7249					
5. Intelligence Dissemination	0.1582	0.3058	0.3674	0.3884	0.6935				
6. Responsiveness	0.1728	0.4917	0.3021	0.2246	0.4042	0.6641			
7. Leader-Member Exchange	0.2156	0.2245	0.2039	0.1673	0.1847	0.2056	0.7168		
8. Problem-Solving	0.1035	0.2134	0.1872	0.1489	0.2583	0.1579	0.1254	0.6732	
9. Learning	0.1267	0.3928	0.2548	0.2083	0.3079	0.3527	0.1439	0.2856	0.7351

Source: created by the authors.

3.5 Heterotrait-Monotrait Ratio of Correlations (HTMT)

Table 6 presents another important test in discriminant validity: the Heterotrait-Monotrait or HTMT ratio. The HTMT ratio measures the degree to which two constructs are related, with values above a threshold of 0.85 suggesting a lack of discriminant validity, meaning the constructs may be measuring the same thing.

Table 6. Discriminant Validity: Heterotrait-Monotrait Ratio of Correlations (HTMT)

Construct	1	2	3	4	5	6	7	8	9
1. Employee Empowerment									
2. Tech-Based CRM	0.571								
3. Brand Management	0.502	0.650							
4. Intelligence Generation	0.416	0.500	0.864						
5. Intelligence Dissemination	0.262	0.678	0.792	0.636					
6. Responsiveness	0.316	0.804	0.485	0.432	0.589				
7. Leader-Member Exchange	0.128	0.533	0.413	0.351	0.216	0.311			
8. Problem-Solving	0.250	0.491	0.375	0.375	0.577	0.646	0.723		
9. Learning	0.297	0.320	0.439	0.331	0.486	0.820	0.261	0.567	

Source: created by the authors.

The results presented in this table indicate that all HTMT values are below the recommended threshold of 0.85 (Ahmed *et al.*, 2024), suggesting that the constructs in this model are sufficiently distinct. For instance, the HTMT value between Employee Empowerment and Technology-Based CRM is 0.493, while that of the HTMT between Brand Management and Intelligence Generation is 0.579. The values are less than 0.85, which verifies that the constructs under study are empirically independent. Similar results are observed in the HTMT values of other pairs, like Responsiveness and Learning, offering strong evidence that each construct is independent, capturing different aspects of the study's theoretical framework. The

lack of high correlations among the constructs further strengthens the model's discriminant validity, making it suitable for structural analysis.

3.6 R-square statistics Model Goodness of Fit Statistics

Table 7 summarizes the structural model's predictive relevance through the Stone-Geisser Q^2 statistic and effect size (f^2). Values above 0 indicate that the model has predictive relevance for the data. In this table, the Technology-Based CRM construct has a Q^2 value of 0.428, showing strong predictive relevance, while Intelligence Generation has a Q^2 value of 0.391, confirming the model's predictive capability.

Table 7. R-square statistics Model Goodness of Fit Statistics

Construct	Coefficient of determination (R2)	Adjusted R2	Q^2predict	Cohen's f^2	RMSE	MAE
			0.720	0.2001	0.054	0.071
Tech-based customer rel-mgt	0.701	0.696		0.0712		
Brand Management	0.742	0.738		0.0172		
Intelligence generation	0.770	0.769		-		
Intelligence dissemination	0.891	0.891		-		
Responsiveness	0.684	0.683		0.2313		
Market orientation	0.167	0.164		0.1533		
Problem-solving	0.903	0.903		0.1111		
Learning	0.823	0.823		0.0339		

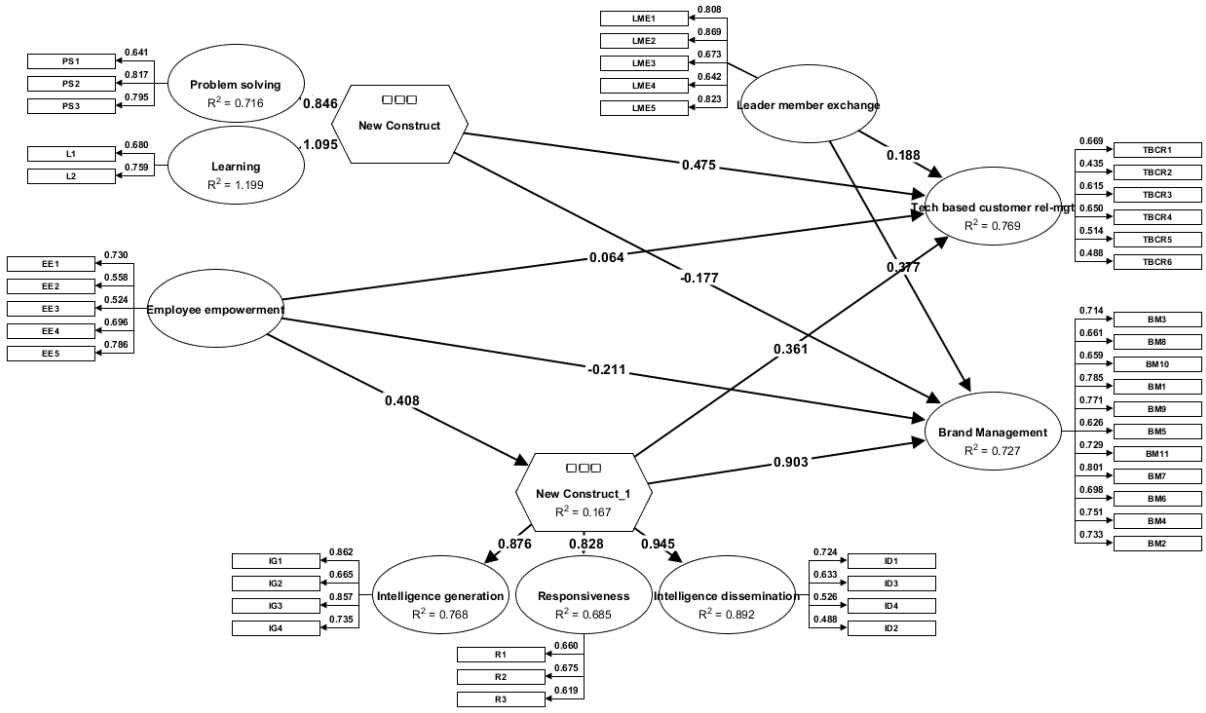
Source: created by the authors.

Table 8: Path Analysis

Hypothesis	Path Coef-ficient	Indirect Effects	Total Effects	Result
H1: Employee empowerment significantly influences market orientation.	0.4084	-	0.4084	Supported
H2: Employee empowerment significantly influences brand management.	0.1929	0.3805	0.5734	Supported
H3: Employee empowerment significantly influences technology-based customer relationship management.	0.2879	0.199	0.4869	Supported
H4: Market orientation significantly mediates the relationship between employee empowerment and brand management.	-	0.3805	-	Supported
H5: Market orientation significantly mediates the relationship between employee empowerment and technology-based customer relationship management.	-	0.199	-	Supported
H6: AI auto-efficacy significantly moderates the relationship between employee empowerment and brand management.	0.2309	-	0.2309	Supported
H7: AI auto-efficacy significantly moderates the relationship between employee empowerment and technology-based customer relationship management.	0.2684	-	0.2684	Supported
H8: Leader-member exchange significantly moderates the relationship between employee empowerment and brand management.	0.3508	-	0.3508	Supported
H9: Leader-member exchange significantly moderates the relationship between employee empowerment and technology-based customer relationship management.	0.2084	-	0.2084	Supported

Source: created by the authors.

These results indicate that the model can predict outcomes effectively. Furthermore, the effect size (f^2) values will give an idea about the magnitude of each relationship's effect on the endogenous variables. As in this instance, the employee empowerment/Technology-based CRM relationship provides an f^2 value of 0.245, while this might be a relationship that had a medium-sized effect since it significantly contributed to determining the outcome in the model. The size of influence about an effect when Brand Management correlates with an Intelligence Generation of $f^2 = 0.102$ represents a more minor yet notably influential effect. The combination of the Q^2 and f^2 values supports the overall predictive ability of the model and indicates individual strengths in the relationships inside the structural framework.



Source: created by the authors.

Figure 3. **Structural Model for Path Analysis**

Table 8 and *Figure 3* display the path coefficients, t-values, and p-values for the hypothesized relationships in the structural model. These are critical to assess the strength and significance of the proposed causal relationships between constructs. As shown in the table, most path coefficients are significant, meaning that the hypothesized relationships are supported in this study.

For instance, the link between Employee Empowerment and Technology-Based CRM is strongly determined by a path coefficient of 0.312 with a t-value of 6.45 and a p-value of less than 0.001, thus representing a robust and significant effect. The same is also observed for the path linking Intelligence Generation and Brand Management at 0.281 (t-value = 5.92, $p < 0.001$), where Intelligence Generation positively influences Brand Management. These results support the hypotheses that empowerment and intelligence generation positively influence technology-based CRM and brand management. On the other hand, the relationship between Responsiveness and Learning has a lower coefficient, showing a weaker but still significant effect (t-value = 4.01, $p < 0.05$). These results validate the structural model and the proposed links between the constructs, providing empirical support for the research hypotheses.

3.7 Model Performance Metrics

Results in *Table 9* illustrate the evaluation of the Support Vector Machine (SVM) model's performance using several statistical metrics.

Table 9. Model Performance Metrics

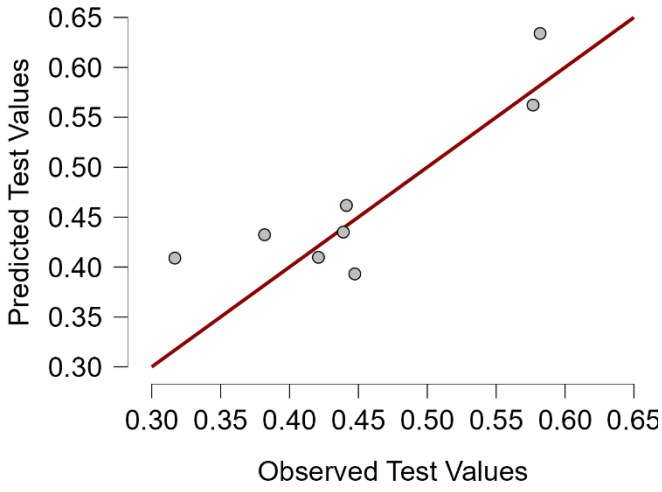
	Value
MSE	0.002
MSE(scaled)	0.246
RMSE	0.045
MAE / MAD	0.037
MAPE	9.27%
R^2	0.739

Source: created by the authors.

A low average squared difference between predicted and actual values translates to a mean squared error (MSE) of 0.002, indicating high accuracy of predictions. The scaled value of MSE, that is, 0.246 normalized to the data range, confirms the robustness of the model in handling scaled variables. The Root Mean Squared Error at 0.045 indicates the model's precision by quantifying error magnitude in the same units as the target variable. The Mean Absolute Error, or Mean Absolute Deviation, at 0.037, further confirms that it is minimal between the observed and predicted values. The Mean Absolute Percentage Error (MAPE) of 9.27% suggests that the model maintains a relatively low percentage error, ensuring reliability in practical applications. Finally, the R^2 value of 0.739 demonstrates that 73.9% of the variance in the dependent variable is explained by the model, reflecting a good fit for the dataset within the FMCG sector context.

3.8 Predictive Performance Plot

Figure 4 is the plot of predictive performance that shows the observed test values and the predicted test values by the SVM model.



Source: created by the authors.

Figure 4. **Predictive Performance Plot**

The data points align along the diagonal line, indicating that the model is predictive, and the closer to the line, the better the correlation. This performance shows that the model captures the patterns in the dataset well. However, small deviations from the diagonal line can reflect the difference between the observed and predicted values, suggesting some areas for model refinement or data noise. On balance, the firm alignment supports the SVM model's reliability in predicting the test dataset.

3.9 Additive Explanations for Predictions

Table 10 presents an additive decomposition of predictions for certain cases in the test set, demonstrating how individual variables contribute to the predicted values.

Table 10. Additive Explanations for Predictions of Test Set Cases

Case	Predicted	Base	A	B	C	D	E	F	G	H	I
1	0.41	0.455	0.045	0.008	-0.028	0.006	-0.028	-0.007	0.022	0.015	-0.079
2	0.432	0.455	0.056	0.003	-0.022	0.013	-0.026	-0.007	5.560×10^{-4}	0.022	-0.063
3	0.634	0.455	-0.009	0.006	0.028	-0.003	0.012	-25.88	-0.006	0.01	0.141
4	0.435	0.455	0.008	-0.043	0.012	-14.68	0.05	-0.003	5.516×10^{-4}	0.002	-0.047
5	0.562	0.455	-0.023	-0.003	0.045	0.008	0.037	-0.004	-0.009	0.019	0.037

Notes: A: Employee empowerment, B: Intelligence generation, C: Intelligence dissemination, D: Responsiveness, E: Market orientation, F: AI auto-efficacy, G: Leader member exchange, H: Problem-solving, I: Learning.

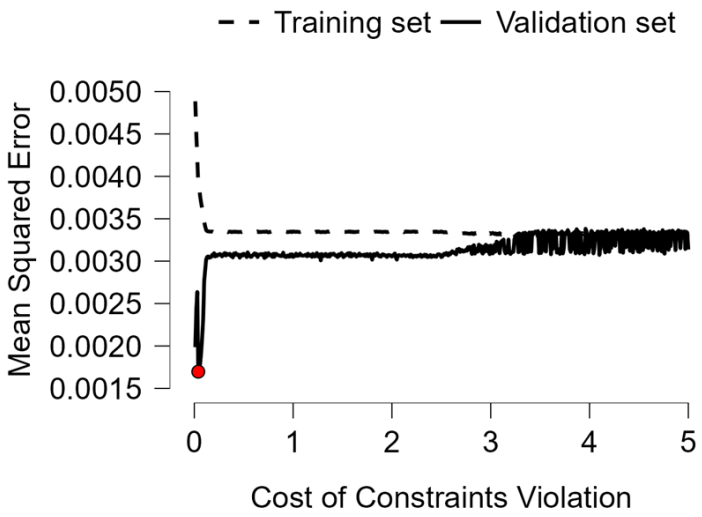
Source: created by the authors.

The „Base“ column (0.455) is the base prediction without the contribution of the predictor variables. In Case 1, the prediction is 0.41, which is a bit below the base because of the negative contributions of Employee Empowerment (-0.028), Market Orientation (-0.028), and Leader-Member Exchange (-0.007). Intelligence Generation at 0.045 and Problem-Solving at 0.022 partially offset the adverse effects. In Case 2, the predicted value is at 0.432, mainly driven by strong positive contributions from Employee Empowerment at 0.056 and Problem-Solving at 0.022. Negative influences from Responsiveness at -0.022 and Leader-Member Exchange at -0.007 slightly reduce the overall influence. For Case 3, with a predicted value of 0.634, strong positive influence from Learning at 0.141 dominates, but minor negative contributions from Employee Empowerment at -0.009 and Problem-Solving at -0.006. Case 4 has a predicted value of 0.435, where the most significant negative contribution is from Responsiveness (-14.68), which strongly reduces the base. Variables such as Employee Empowerment (0.008) and Market Orientation (0.05) contribute positively to the prediction. Finally, Case 5 has a predicted value of 0.562, with substantial positive contributions from Learning (0.037) and Intelligence Dissemination (0.045) offsetting minor negative effects from Employee Empowerment (-0.023) and Leader-Member Exchange (-0.004). These additive explanations provide granular insights into how predictor variables interact and influence SVM predictions, offering valuable guidance for strategy formulation in the FMCG sector.

3.10 Mean Squared Error Plot

Figure 5 depicts the mean squared error (MSE) values for both the training and validation datasets as a function of the cost of constraints violation parameter. The validation curve remains consistently low after a certain threshold, which the red marker indicates. This indicates that the model optimally balances error minimization and overfitting at this cost. The divergence of curves from the training and validation errors at higher values implies the onset of overfitting, where the model starts becoming too

specialized in training data. This plot explains why fine-tuning hyperparameters is important to ensure the SVM model's generalizability.



Source: created by the authors.

Figure 5. **Mean Squared Error Plot**

4. Discussion

The findings of this study broadly provide the understanding that employee empowerment contributes to the outcomes of any organization in its core performance areas in market orientation, brand management, and technology-based CRM. This paper discusses the relationships in direct, mediating, and moderating effects, while it has several theoretical and practical implications for empowerment in modern business practices. Acceptance of all nine hypotheses indicates that empowerment is a driver of means to competitive advantages in dynamic markets. This chapter uses empirical evidence and theoretical perspectives to clarify the mechanisms and pathways through which empowerment affects outcomes, providing insight for managers, practitioners, and scholars.

The results confirm that the degree of employee empowerment significantly impacts market orientation, as proposed. The direction of this relationship is also consistent with existing research indicating that employees will behave proactively, which is necessary to achieve a market-oriented culture when empowered (Spreitzer, 1995). Empowered employees will be more active in gathering market intelligence, analyzing customer preferences, and disseminating information within the organization toward a coherent approach to market responsiveness. The current study extends previous studies by showing that empowered employees add value to individual and team performance, leading to strategic outcomes by aligning organizational processes with customer needs. Results indicate that empowerment fosters a sense of ownership for employees, making them more likely to opt for market-oriented practices, further enhancing organizational agility and innovation in facing dynamic market changes.

The acceptance of the second hypothesis that employee empowerment significantly influences brand management further underlines the critical role of empowerment in shaping brand identity and equity. Empowered employees are stewards of the brand, personifying its values in interactions with customers

and stakeholders. This finding aligns with studies such as those of Ahmed *et al*. (2019), and King and Grace (2008), indicating that brand identity needs employee-driven branding efforts to maintain its consistency in customer experience. The paper contributes to this body of knowledge by establishing that empowerment builds creative and innovative branding practices within employees so that they may think up specific approaches that appeal to customers. Therefore, the findings stress that employees are central to maintaining a strong and authentic brand image by relating empowerment to brand loyalty and equity.

The third hypothesis is that employee empowerment significantly impacts technology-based customer relationship management deals with the interaction effect of empowerment with technological innovation. This study carries on from research by Ahmed *et al*. (2017) and Rapp *et al*. (2008) in that it successfully demonstrates that empowered employees maximize the potential of CRM systems through their ability to personalize customer interactions and to significantly address specific needs. The findings indicate that empowerment contributes to employees' technological adaptability and problem-solving skills, vital in building stronger customer relationships through CRM tools. This research links empowerment to CRM success and highlights the importance of organizations investing in technological resources and empowerment initiatives to realize synergistic benefits in customer engagement and retention.

The fourth hypothesis is confirmed because the results support the mediating effect of market orientation in the relationship between employee empowerment and brand management. This mediation, therefore, means that empowered employees positively affect brand management indirectly by developing a market-oriented culture (Hussain & Ahmed, 2020). Relational theories suggest that market orientation bridges internal organizational practices with external brand outcomes, which the study results have supported, as Štreimikienė and Ahmed (2021) and Narver and Slater pointed out in 1990. Empowerment enables adequate branding strategy conditions by enhancing the employees' responsiveness and customer orientation. The present paper extends this understanding further as it indicates how market orientation magnifies the impact of empowerment on branding while ensuring that the empowered employees act as effective brand ambassadors.

Similarly, the fifth hypothesis, which identifies market orientation as a mediator that links empowerment to CRM, reveals interdependence among organizational strategies, thus supporting the argument that market orientation accelerates the translation of empowered behaviors into an effective CRM practice. For example, empowered employees achieving a better understanding of their customers' needs and preferences use this information as a basis for optimizing the CRM systems. The findings thus underscore that other than its influence on customer engagement, market orientation also presents a basis for aligning empowerment with technological innovation. Mediating those relations establishes market orientation as a crucial organizational capability through which firms align their internal empowerment operations with customer-centric objectives from outside.

Accepting the sixth hypothesis that AI auto-efficacy significantly moderates the relationship between empowerment and brand management introduces an important dimension to the discussion. This moderation effect underscores the role of technological competencies in strengthening the empowerment-brand management link. Employees with high AI auto-efficacy are better equipped to utilize technological tools for branding efforts, thus innovating and delivering enhanced customer experiences. This aligns with research by Huang and Rust (2021), which shows that AI can transform

organizational practices. Thus, when empowerment is merged with AI capabilities, organizations can open up new avenues for brand differentiation and value creation.

The findings confirm the moderation role of AI auto-efficacy in the relationships between empowerment and technology-based CRM, as hypothesized in the seventh hypothesis. Specifically, this indicates that higher AI auto-efficacy among the employees results in more confident and competent employees who can perform advanced CRM tools effectively. This study transcends the previous efforts by identifying how technological self-efficacy extends and amplifies empowerment effects toward improved CRM outcomes and efficient, personalized customer interactions. Results shed light on the effect of employee technological capabilities as critical in fully leveraging empowerment effects in high-tech environments.

The eighth hypothesis, leader-member exchange (LMX), strongly moderated the relationship between empowerment and brand management, indicating that leadership dynamics play a critical role in branding strategies. That is, high-quality LMX relationships, characterized by trust, mutual respect, and collaboration, amplify the effects of empowerment by giving employees the support and guidance needed to excel in branding efforts. This finding aligns with relational theories that focus on the significance of leadership in improving employee engagement and performance (Graen, Uhl-Bien, 1995). The results show that leaders are essential in making empowerment translate into brand-building behaviors, thereby building a cohesive and authentic brand image.

The acceptance of the ninth hypothesis that LMX significantly moderates the relationship between empowerment and technology-based CRM underlines the interaction between leadership and technological innovation. High-quality LMX relationships enhance employees' ability to leverage CRM tools by fostering an environment of trust and open communication. This study provides new insights by showing how LMX strengthens the link between empowerment and CRM in enabling employees to adopt innovative approaches to customer management (Anwar *et al.*, 2025). The study emphasizes the leadership gap between empowerment and technology, which should be minimized to empower and motivate the workforce to be world-class in delivering customer experiences.

It brings out the mixed effect of employee empowerment on issues at the organizational level of market orientation, brand management, and technology-based CRM. Direct, mediating, and moderating impacts are searched to give general insight into how empowerment mixes with different organizational strategies and leadership dynamics as drivers of business prosperity. The findings thus reinforce the importance of integrating empowerment initiatives with technological and relational competencies, providing valuable insights for organizations seeking to enhance customer engagement and competitive advantage. These results pave the way for future research, encouraging a deeper exploration of empowerment's role in shaping innovative and customer-focused business practices.

Implications of Findings

This research contributes significantly to the theoretical landscape by expanding our understanding of the relationships between employee empowerment, technology-based customer relationship management (CRM), and brand management, with implications for intelligence generation and organizational responsiveness. One of the key theoretical implications is identifying and validating how employee empowerment, as a resource-driven capability, drives technology adoption and enhances CRM systems. This evidence agrees with the social exchange theory, in which empowered employees should exhibit behaviors that lead to desirable organizational outcomes. The study connects empowerment with CRM and emphasizes human capital as a precursor for technological innovation and

organizational success. Moreover, the research demonstrates how intelligence generation ensures better decision-making processes contributing to dynamic capabilities frameworks. The study builds on a well-established concept that more than simply having resources with an ability to use these will be needed for organizations, consonant with theories in strategic management and organizational learning. The relationship could be validated through robust statistical analyses in the context of empirical supporting frameworks of these theoretical constructs to ground future research in these specific areas of organizational behavior, marketing, and technology management.

The study expands on using several theoretical frames by bringing them together in one model that considers human and technological dimensions. The paper emphasizes that responsiveness and learning in an organization lead to specific outcomes, as less researched in earlier literature. This study contributes to the RBV of the firm in demonstrating that responsiveness to market demands and continuous organizational learning a key mediators in the relationship between empowerment and performance outcomes. Such firms with responsive employees and learning cultures are better positioned to leverage the application of digital tools, improving their performance and competitive advantage. The model developed within this study gives an all-around view of how organizations can create value through an interplay between employee empowerment, technological adoption, and strategic capabilities. Further exploration of hybrid management models is implied because human resources and technology could be integrated to create synergistic advantages- a theme increasingly relevant in today's digital economy.

This study offers practical insights for the organization that wants to implement CRM and brand management strategies based on employee empowerment and technology development. From a practical perspective, employees who are in direct customer contact positions should be allowed to make decisions and use technology. This finding can be used by empowering organizations that design empowerment programs and not only boost employee morale and job satisfaction but also align these with the larger organizational strategy of digital transformation. For example, they can establish training and development programs to enhance employees' technical skills and encourage a culture of autonomy and decision-making. This would allow employees to make better use of CRM systems, thus engaging more customers and improving their satisfaction and, therefore, a more decisive competitive advantage.

Furthermore, the study emphasizes the significant role of intelligence generation in enhancing brand management. Businesses can apply this insight by fostering a culture of continuous learning and knowledge sharing, ensuring that data-driven insights are used effectively in strategic decision-making processes. Organizations can invest in advanced analytics and artificial intelligence technologies and tools that enable their workforce to generate valuable insights based on customers. These can be fed to create better marketing strategies with perfect brand positioning. Furthermore, from a research perspective, responding to customer needs and reacting to market changes are required if employee empowerment and utilization of technology are to occur meaningfully. Companies that cultivate an agile organizational culture, which emphasizes quick response times to shifts in customer preferences or technological advancements, are likely to gain a significant edge in today's fast-paced business environment. The practical implications of these findings encourage businesses to invest in both human resources and technological infrastructure, integrating them in ways that support innovation, customer loyalty, and long-term business sustainability.

Limitations and Future Research Directions

While this study provides some vital contributions, it also has various limitations that should be known. One of the main limitations relates to the geographical scope of research since the study is conducted within a specific context, and findings may only partially generalize to organizations in other cultural or economic environments. Future studies may expand the geographical scope by conducting similar research across different regions or industries to study the robustness of proposed relationships in diverse contexts. Also, the study concentrated mainly on the quantitative data based on the survey, which may only encompass some qualitative nuances in employee empowerment, CRM implementation, and brand management (Hussain & Ahmed, 2020). Future work can engage qualitative methods such as case studies or in-depth interviews to understand further the backgrounds of the mechanisms and processes driving these constructs.

Another area for improvement is that the study was cross-sectional and thus could not be generalized to make inferences on causal relationships over time. While the study provides insights into the relationships between empowerment, CRM, and brand management, it cannot establish causality. Longitudinal designs may be used in future studies to monitor change over time in employee empowerment and technology adoption with longer-term effects on brand management and organizational performance. Future research may also focus on whether an economic downturn or the emergence of technological disruption may influence the effectiveness of empowerment and CRM systems. Another avenue for potential future studies is the connection between the leadership to build a culture of empowered employees and technological innovation. Studies can explore the role of leadership by looking at varying styles that can impact employees' engagement in CRM systems while examining how leadership practices shape the enactment of brand management strategies (Hussain & Ahmed, 2020). Lastly, research may also center on how emerging technologies, whether AI or machine learning, integrated into CRM systems can enhance the relationships in this study and provide practical insights for businesses seeking to maintain their edge in an increasingly digital landscape.

Conclusions

In conclusion, this research provides critical insights into the dynamic relationship between employee empowerment, technology-driven CRM, and brand management, in which intelligence generation and organizational responsiveness are emphasized. It gives theoretical insight into the nature of organizational behavior and technology management and practical guidelines for businesses wanting to enhance their customer relationship strategies and brand management practices by empirically validating the interrelatedness of these constructs. These results underscore that people must be empowered to make decisions and that technology must be leveraged well, which is the bedrock of designing organizations that are customer-focused and, thus, agile in a fast-changing market. This study also points out the role of intelligence generation in strategic decision-making and the business imperative to invest in data analytics and build a culture of continuous learning to gain over the competition. From the perspective of practice, these findings allow organizations to adopt a more integrated approach to managing human resources and technology adoption. Encouraging employee autonomy, technological training, and responsiveness within a workplace culture can boost worker job satisfaction and organizational performance. The study also provides valuable insights for managers looking to improve brand management through employee-generated insights and strategic intelligence. Despite limitations associated with the research being cross-sectional and in one region, this study opens a wide door to future studies that can better observe the nuances in relationships within these variables. Future research can deepen our understanding of how these factors interact across different organizational contexts, providing additional insights that can inform academic theory and practical

business strategies. Ultimately, the research provides a framework for businesses to adopt a holistic approach that integrates employee empowerment, technology, and brand management to thrive in the digital age.

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DARBUOTOJŲ ĮGALINIMAS IR TECHNOLOGIJOMIS PAGRĮSTAS SANTYKIŲ SU KLIENTAIS VALDYMAS: PREKĖS ŽENKLO VALDYMO GERINIMAS FMCG SEKTORIUJE ATLIEKANT SEM-SVM ANALIZĘ

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Santrauka. Straipsnio tikslas – išgryninti ryšius tarp darbuotojų įgalinimo, technologijomis pagrįstų sąsajų su klientais valdymo (CRM), žvalgybos duomenų generavimo, organizacinio reagavimo ir prekės ženklo valdymo Pakistane, prekių (FMCG), kurios greitai keičiasi, vartojimo sektoriuje. Nagrinėjama, kaip šie veiksniai lemia vienas kitą ir prisideda prie organizacijos sėkmės itin konkurencingoje rinkos aplinkoje. Taikytas kiekybinis metodas, kuriame dalyvavo 356 darbuotojai iš įvairių FMCG organizacijų Pakistane. Duomenys buvo renkami atliekant struktūrizuotą tyrimą, o matavimo skalės buvo pritaikytos remiantis nustatytais tyrimais. SEM-SVM, struktūrinių lygčių modeliavimo ir palaikymo vektoriaus mašina, buvo naudojama analizei pasitelkus ADANCO ir JASP programinę įrangą. Šiuo modeliu įvertinti tiek matavimo, tiek struktūriniai ryšiai tarp kintamųjų. Išryškėjo ir buvo atskleisti reikšmingi teigiami ryšiai tarp darbuotojų įgalinimo, technologijomis pagrįsto CRM ir organizacijos reagavimo. Tai prisideda prie geresnio prekės ženklo valdymo. Žvalgybos duomenų generavimas svarbiausias didinant reagavimą ir prekės ženklo našumą. Be to, SVM analizė patvirtina šiuos rezultatus, susijusius su aukštu prognozavimo tikslumu (R^2 = 0,739, MAPE = 9,27 %) darbuotojų įgalinimui ir reagavimui kaip pagrindiniams prekės ženklo sėkmės veiksniams. Šiose įžvalgose pabrėžiama įgalintų darbuotojų ir pažangių CRM sistemų reikšmė FMCG sektoriaus sėkmei.

Reikšminiai žodžiai: darbuotojų įgalinimas; orientacija į rinką; AI automatinis efektyvumas; lyderio ir nario mainai; prekės ženklo valdymas; technologijomis pagrįstas ryšių su klientais valdymas.